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EXAMINER

LAFLAME JR, MICHAEL A

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte NING LI and QIN PING ZHAO

Appeal 2015-007178
Application 13/470,432
Technology Center 3700

Before CHARLES N. GREENHUT, THOMAS F. SMEGAL, and
ERIC C. JESCHKE, *Administrative Patent Judges*.

JESCHKE, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Ning Li and Qin Ping Zhao (“Appellants”) seek review under 35 U.S.C. § 134(a) of the Examiner’s decision, as set forth in the Final Office Action dated July 7, 2014 (“Final Act.”), and as further explained in the Advisory Action dated November 21, 2014 (“Adv. Act.”), rejecting claims 1, 5, 7, 8, 11, and 12.¹ Claims 2–4, 6, 9, 10, and 14 are canceled and claims 13 and 15–17 are withdrawn. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

¹ Appellants identify SAE MAGNETICS (H.K.) LTD. as the real party in interest. Appeal Br. 3.

BACKGROUND

The disclosed subject matter “relates to a soldering device and a soldering method and, more particularly, to an apparatus and a method for forming electrical solder connections in a disk drive unit.” Spec. ¶ 1. Claims 1 and 11 are independent. Claim 1 is reproduced below, with emphasis added:

1. An apparatus for forming electrical solder connections in a disk drive unit, comprising:

a nozzle device for carrying out soldering on two pre-welding surfaces, the nozzle device comprising a nozzle and a holder for holding the nozzle, and the nozzle and the holder being two separate structures removably connected to one another by a fixture; the nozzle having a main passage and a solder ball outlet, and the holder having a guiding passage communicated with the main passage and a common passage, and the common passage, guiding passage and main passage being coaxial;

a solder ball feeding device for transferring a single solder ball to the nozzle device;

a gas pump device for supplying pressurized gases to the nozzle device;

a laser device for emitting laser beams to the solder ball, thereby melting and reflowing the solder ball; and

a control device comprising at least one sensor for at least detecting status of the solder ball or pressure in the nozzle device or distance between the nozzle device and the pre-welding surfaces, and a control unit connected with the at least one sensor, *the control device further comprising a second sensor connected with the guiding passage and being configured to detect whether the pressure in*

the guiding passage achieves a predetermined value,

wherein the common passage is provided for connecting the nozzle device with the solder ball feeding device, the gas pump device and the laser device respectively, the common passage has a rectangular cross section, which has a first diameter larger than the diameter of the solder ball, and the guiding passage has a tapered cross section which has a maximum diameter and a minimum diameter, and the minimum diameter is larger than the first diameter.

REJECTION

Claims 1, 5, 7, 8, 11, and 12 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Matsumoto (US 2010/0089981 A1, published Apr. 15, 2010), Wagoh (US 7,591,406 B2, issued Sept. 22, 2009), and Reiber (US 2007/0131661 A1, published June 14, 2007).²

² The Examiner confirms that this is the rejection pending. *See* Ans. 3 (§ 2(a)) (responding to Appeal Br. 8 (third paragraph)). In the Final Office Action, the Examiner rejected (1) claims 1, 5, 7, 8, 11, and 12 as unpatentable over Matsumoto and Wagoh and (2) claim 6 (now canceled) as unpatentable over Matsumoto, Wagoh, and Reiber. *See* Final Act. 2–11. In an Amendment after Final filed November 6, 2014, Appellants incorporated certain limitations from claim 6 into independent claims 1 and 11, and canceled claim 6. *See* Appeal Br. 8.

DISCUSSION

Both independent claims 1 and 11 recite, among other limitations, “a control device . . . further comprising a second sensor connected with the guiding passage and being configured to detect whether the pressure in the guiding passage achieves a predetermined value.” Claims App. 2, 4.³

In the Final Office Action, the Examiner relied on Reiber ¶ 35. *See* Final Act. 10–11.⁴

Appellants correctly argue that Reiber “fails to teach or suggest” the limitations at issue because, “[a]lthough Reiber mentions a pressure sensor, it is silent on a sen[s]or being connected with the guiding passage and being configured to detect whether the pressure in the guiding passage achieves a predetermined value.” Appeal Br. 14. Appellants contend that, “[i]nstead, the pressure sen[s]or is used with respect to coining and in marked contrast aids in determining whether a solder ball has been sufficiently coined — as may be observed from various readings generated by the sensor and as may be observable at a computing device coupled to the system.” *Id.*

The Examiner responds that “Reiber discusses a pressure sensor at [0035]” and that “[a]lthough Reiber does not show the pressure sensor in the figures, Reiber discusses the pressure sensor’s use with determining whether a solder ball has coined [0035].” Ans. 6. The Examiner, seemingly

³ We refer to the Claims Appendix filed with the Response to Notice of Non-Compliant Appeal Brief dated April 23, 2015. Also, we will refer to this limitation as the “limitations at issue.”

⁴ The limitations at issue are revised versions of language previously recited in dependent claim 6 (now canceled). *Compare* Claims App. 2, 4, *with* Amendments to the Claims filed Sept. 4, 2013. As the original findings regarding the limitations at issue, we refer to the findings addressing the relevant language in now-canceled claim 6.

acknowledging the absence of any disclosure in Reiber concerning the location and function of the pressure sensor in paragraph 35, also states: “It is respectfully argued that a person of ordinary skill in the art would measure the pressure in the guiding tube to be sure that the size of a solder ball is not a desired size either too large or too small (a predetermined size).” *Id.*

The Examiner has not adequately explained (and it is unclear from our review of Reiber) how the relied-upon disclosures teach or suggest all aspects of the limitations at issue. For example, the Examiner has not established, with sufficient technical reasoning or evidence, the proffered relationship between the size of a solder ball and the pressure in a guiding tube. *See* Ans. 6. Thus, we do not sustain the rejection of independent claims 1 and 11, and also do not sustain the rejection of claims 5, 7, 8, and 12 (which depend from claim 1).

DECISION

We REVERSE the decision to reject claims 1, 5, 7, 8, 11, and 12.

REVERSED